

ENC series

Automatic 3 Stage

User Manual

AUTOMATIC BATTERY CHARGER



ISO9001:2000 ROHS   

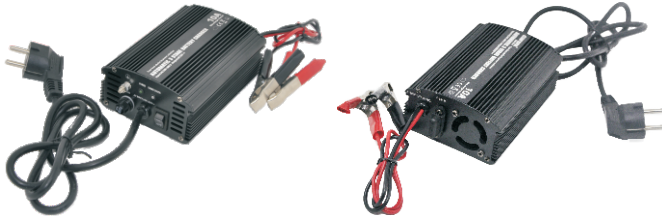
Specifications are subject to change without prior notice.

Contents

1. Warning & Caution	1-2
2. Introduction	2
3.Feature	2
4.Environment	2
5. Instruction	3-4
6. Installation and Connection	4
7.Normal 3-Stage (IUoU)Charging Operation	5
8. Protection Features	6
9.Recommend Battery Capacity	6
10. Specification	7
11.Trouble Shooting	8
12.Warranty	9-10

Automatic 3 Stage Battery Charger

User Manual



Keep this manual in a safe place for quick reference at any time.

This manual contains important safety and operation instructions for correct use of the battery charger. Read through the manual and pay special attention to the marking and labels of the charger, battery and equipment connected to the battery system.

1. Warning & Caution

● Pay special attention to these two types of notices used in this manual.

⚠ **WARNING:** Failure to read this warning may cause injury to persons and damage to equipment.

⚠ **CAUTION:** Failure to observe this warning may result in damage to equipment and improper functioning of the charger.

⚠ **WARNING:**

- The Charger is designed for in-door use, protect the charger from ingress of water.
- This Charger is made to charge only properly sized lead acid batteries.
- Don't recharging non-rechargeable batteries.
- Charging other types of battery or under-sized lead acid batteries may cause fire or explosion.
- Install the charger in accordance with all local codes.
- Do not use the charger if it has been dropped or damaged.
- Do not remove casing of the charger, there is no user-serviceable parts inside.
- Do not charge the battery on boats, remove the battery and charge on shore.
- Never attempt to charge a frozen battery.
- Never attempt to charge a damaged battery.
- Never place the charger top of a battery.
- Never smoke, use an open flame. Or create sparks near battery or charger during normal charging operation as batteries may give out explosive gas.
- Do not charge batteries in an enclosure(box-in) due to possible explosion of entrapped explosive gas.

⚠ CAUTIONS:

- Use of accessory not recommended may cause risk of fire, electric shock.
- Disconnect the mains supply before connecting or disconnecting the links to the battery.
- If the charger does not work properly or if it has been damaged, unplug its AC and DC connection.
- Ensure all ventilation ports are not obstructed for efficient fan cooling, keep loose soft material or paper off at the bottom of the charger.
- During charging, the battery must be placed in a well ventilated area.

2. Introduction

Congratulations on purchasing our automatic 3-stage battery charger.

This battery charger is suitable for all kinds of storage battery, it control through current, can well charge for different batteries. in both car (SLI) and deep cycle type of lead battery.

It is a "set and forget" automatic charger which can be permanently connected to battery.

This charger have two outputs, added USB output port can be used charge for your digital equipment at same time when charging your battery. It with Intelligent temperature compensation function, can adjust charging voltage to compensate for battery temperature, providing an accurate charge in any climate.

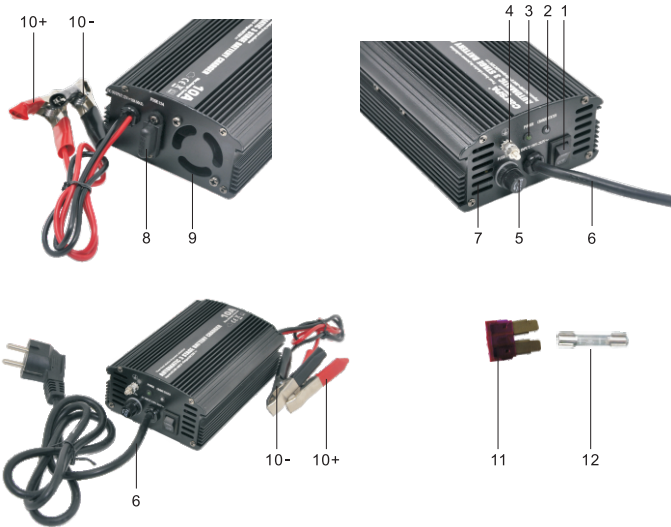
3. Feature

- ON/OFF Switch.
- Wide I/P Voltage Range: It is able to handle a wide AC I/P voltage range, from 100 to 240 volts AC (<12A).
- Battery Status Indicators: Red displays fault, Green LED displays power ON, white LED (dual color LED) shows red displays undering charging and green displays float charge).
- Short Circuit Protection: Charger O/P cut-off automatically when overload
- Intelligent Temperature Compensation: Adjust charging voltage to compensate for battery temperature, providing an accurate charge in any climate.
- Overcharge Protection: Constant voltage & constant current output avoid overcharging.
- Compact & Reliable: Designed by reliable high frequency technology with smaller size.
- Strong & Stylish: Designed by stylish aluminum case with better cooling efficiency.
- Soft start bulk charge.

4. Environment

- Operating Temperature: -15~50°C, Ambient.
- Operating Humidity: 5~95%RH, No Condensing.
- Storage Temperature: -20~85°C, Ambient.
- Vibration: 2G, 10~500Hz, 3axes.

5. Instruction

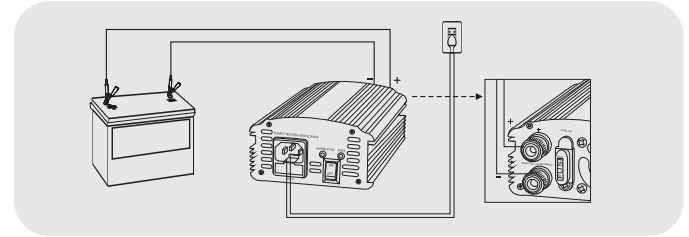


- (1) Power Switch
To turn on and off AC power to charger
(2)(3) LED indicators

Power	Indicate the charger in good condition and ready to charge.
Charge Status	Red in charging state, green for fully charged.

- (4) Ground pole
(5) AC fuse port
(6) AC Power cord
(7) Ventilation hole
(8) DC fuse port
It melt when reverse polarity happens. You can changed it by yourself.
(9) Cooling fan
Fan works when the charger start working, and stops when charger turn to floating charge state.
(10+)(10-) DC power plug
Red for positive terminal(+); Black for negative terminal(-)
(11) DC fuse
(12) AC fuse

6. Installation and Connection



Observe the warning & safety precautions before rushing to install and operate the charger. Check the battery condition, clean battery poles.

Secure the battery charger in a well ventilated place, make sure the mounting surface is flat and without soft covering material or loose paper sheet. Make sure intake and outlet are Not blocked. Never place charger on top of battery. Before connecting or disconnect the charging cable, turn off the power switch and unplug AC cord From the mains.

1. First connect the red cable to positive + terminal of charger and the battery Positive +pole, then connect the black cable to the Negative terminal and the Negative pole of the battery.

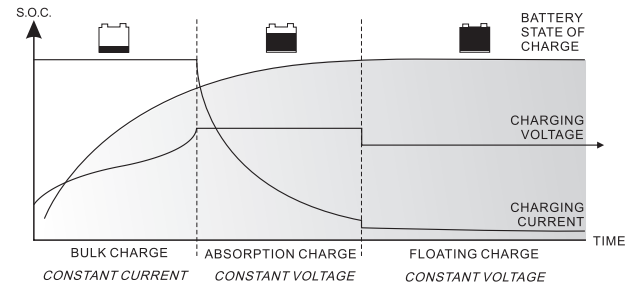
Note: Make sure all the connections are secured and well tighten up, double check on the correct polarity. Plug in the AC mains and turn on power switch, the Power on green LED should be on.

3. Connect the AC cable (6) to public power, LED (2)(3) lit, in normal state.

7. Normal 3-Stage (IUoU) Charging Operation

The 3 stage IUoU charge algorithm ensures fast, complete and at same time gentle charging of the lead acid battery.

3-STAGE CHARGING DIAGRAM



State	Name	Explanation	Specification
Stage 1	The constant current charging.	Normally the battery is charged at constant maximum current until it rises to absorption voltage level. The charging voltage changes with the battery voltage.	Full Load Charge
Stage 2	The constant voltage charging.	When the battery voltage rises to the absorption voltage level, the charging switches to constant voltage charging and battery is over 85% full. The battery is kept at this high voltage while the current reduces gradually to set value at which the charger automatically switches to float stage.	12V: 14.5V±0.2V
			24V: 29.5V±0.2V
Stage 3	The floating voltage charging.	In this stage, the battery is full and only takes in the amount of current necessary for maintaining the capacity.	500-900mA

8. Protection Features

Reverse Polarity	If reverse connection happens, the DC fuse(11) melt.
Short - Circuit	Short circuit happens, LED lights off.
Over Charging	DC output current limited
Over Voltage	if used with improper battery, charger auto shut down
Output Fuse Indicate	DC fuse melt, LED light off.
Over Heating	Temperature over 80℃, automatically shut down, LED lights off.

9. Recommend Battery Capacity

Model	ENC1210	ENC1220	ENC2410
Battery Capacity	>50Ah;<100Ah	>100Ah;<200Ah	>50Ah;<100Ah/24V

10. Specification

Model		ENC1210	ENC1220	ENC2410
Output	DC Voltage	12V	12V	24V
	Restrict Voltage	14.5V±0.2V		29.5V±0.2V
	Floating Voltage	13.8V±0.2V		27.7V±0.2V
	Wattage	144W	288W	290W
	Efficiency at maximum power	110V:>83% ; 230V:>87%		
Input	Max output charging current (continuous)	10A	20A	10A
	AC voltage range	110V(90-165V) / 220V(190-265V) or 90-265V(only for 12V10A)		
Protection	Polarity Reverse	O/P Cut-off,Auto-Recover		
	Short Circuit	O/P Cut-off,Auto-Recover		
	Over load	O/P Current-Limited		
	Temperature	Inner Temp. More than 80℃, auto.shut off		
Fuse	AC fuse	3A	3A	3A
	DC fuse	15A	25A	15A
Others	Dimensions	195*102*55.5mm	235*102*55.5mm	
Remarks	All values are based on the standard ambient temperature 25℃ and pressure 0.1 Mpa			

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11. Trouble Shooting

Problem	Indications	Possible Causes	Suggested Solution
Charger does not work	LED lights off.	No AC power AC input socket fuse blown	Check all connections are correct. Replace the AC fuse by qualified electrician.
No DC output	LED lights off.	Output short circuit Over temperature protection triggered Severe over loading charger Reverse polarity connection	Check DC connections between charger and battery Check air intake vent at bottom of charger is blocked or not. Check charger ambient ventilation. Check battery Ah capacity within recommended range Check for correct polarity, replace car blade fuse(6)
LED light(4) in RED in an abnormal long period	Battery can not be fully charged	Bad battery connection Ambient temperature too low Battery has damaged cell or battery is too old	Check for loose contact, right cable size, cable integrity Recheck battery type and change to correct battery selection Move battery to a room temperature location, or get an optional temperature sensor Replace battery

12. Warranty

Our factory(dealer) warranty for the product.

13.1 limited product warranty and exclusions:

we provide a limited warranty that covers defects of the products you ordered caused by material or manufacturing faults. The warranty period is for 24 months and begins on the date of purchase by the original end user.

This limited warranty is made only to the original purchaser of the unit, and is not transferable to any subsequent owner.

We will, at its option, repair or replace the defective component(s) free of charge, Provide that our factory is notified of the defect during the warranty period and a dated proof of purchase is furnished. We reserve the right to inspect the faulty component(s) and determine if the defect is due to material or manufacturing flaws. We also reserve the right to charge for service time expended if the defect is not due to material or manufacturing flaws or is not for some other reason subject to this limited warranty.

We are not warrant unit from any and all defects or damage caused by :

- a. Normal wear and tear
- b. Shipping or transportation damages
- c. Improper use or installation
- d. Explose to unsuitable environment conditions (including but not limited to damage due to lightning strikes)
- e. Unauthorized or abnormal use or operation
- f. Negligence or accidents
- g. Material or workmanship not provided by us
- h. This warranty does not cover costs related to remove, installation, or troubleshooting of your electrical systems we will, at its option, use new and / or reconditioned parts in performing warranty repair and in building replacement products.


We reserves the right to use parts or products of original or improved design in the repair or replacement. If we repairs or replace product, its warranty continues for the remaining portion of the original warranty period expires later. All replaced products and all parts removed from repaired products become the property of us. We covers both parts and labour necessary to repair the product and return shipment to the customer, via a our selected non-expedited freight carrier within installation, removal or reinstallation of the unit.

13.2 Buyer (customer) information:

Customer Name		Date of Purchase	
Product model		Contact Number	
Product No.		E-mail Address	

Signature: _____

Selling Company:	
Selling Address:	
Contact Person:	Contact Number:

 **Our factory authorized the dealer to sign or stamp ,and this table come into effect should be signed or stamped by the dealer.**

13.3 You will need to provided the following to help process your warranty and repair of the device:

- this table or manual
- copy of the till receipt(invoice,receipt) with the date of purchase.
- Reason for the complaint or a description of the fault.

13.4 Pls stick the receipt to this page,to avoid missing or lost

Stick Receipt Place